



PRELIMINARY PHYTOCHEMICAL AND PHARMACOGNOSTIC STUDIES OF *HELIXANTHERA WALLICHIANA*- AN ENDEMIC PLANT OF WESTERN GHATS

Ajith Kumar T G^{1*} & Lizzy Mathew²

Department of Botany, St.Teresa's College,Ernakulam, Kerala,India

¹Department of Botany,St.Teresa's college,Ernakulam,Kerala,India

ajithgopalakrishnan81@gmail.com

*Corresponding author

²,Department of Botany,St Teresa's college, Ernakulam,Kerala,India

ABSTRACT: *Helixanthera wallichiana* (Schultes) Danser belonging to Loranaceae was studied for phytochemical and Pharmacognostical standards. The result of organoleptic studies revealed that it possesses characteristic odour, coffee brown colour and slightly salty taste. The fluorescence analysis of the plant powder under visible light and UV light by treatment with various chemical reagents showed different colour changes. The presence of various secondary metabolites like alkaloids, flavonoids, glycosides, phenols and tannins etc. were confirmed in the ethanolic extract.

KEYWORDS: *Helixanthera wallichiana*, Loranaceae, Organoleptic studies, RET plants.

INTRODUCTION

The forests of Western Ghats of Kerala are endowed with a very rich collection of rare medicinal plants, of which many are endemic to the region. The tribes living in this region are known to possess great knowledge on the medicinal uses of many of these plants¹⁰. Majority of the plants parasitic on huge trees were still underutilized as they were away from the vicinity of these people and researchers. The word mistletoe is applied to hemiparasitic plants, belonging to families Loranaceae and Viscaceae with exception of some genera¹¹. In the Indian subcontinent, probably due to their parasitic nature and strange growth habit mistletoes have been revered, feared or thought to have magical properties by many ethnic communities. An exhaustive survey of literature revealed that studies on the epiphytes and parasites which are special groups of plants are comparatively limited¹⁰.

Helixanthera wallichiana (Schultes) Danser is a RET (Rare Endemic and Threatened) plant⁷ of Western Ghats belonging to the family Loranaceae. It is a shrubby plant usually parasitic on *Mimosa*, *Bridelia*, *Ardisia* and *Helicteris*. The leaves are sessile 12 x 6 cm, ovate, elliptic, acute at both ends. Petals 4 free to base 0.25cm long scarlet³. Phytochemical and pharmacological validation of this plant was not yet reported so that it has to be undertaken for a thorough understanding of its valuable bioactive compounds and possible utilization in ayurvedics. In the present work a preliminary validation of the phytochemical and pharmacognostic characteristics of *Helixanthera wallichiana* had done to introduce this plant to the herbal therapeutics.

MATERIALS AND METHODS

Collection of plant materials: *Helixanthera wallichiana* (Schultes) Danser (Figure 1&2) growing on the host *Bridelia* sp. was collected from the Idukki arch dam area in the Idukki district of Kerala, India during the month of August 2013. The whole plant collected was shade dried for 45 days after thorough

washing in running water followed by distilled water. The dried specimen were powdered and stored in airtight polythene bags in low temperature for future studies.



Figure 1: A branch with fruits



Figure 2: Young fruits

Preparation of the extract⁸: 20 gm of the powdered sample was extracted with 200ml ethanol in a soxhlet apparatus at a temperature of 50⁰ C for 10 hours. The extract is then concentrated in rotary evaporator to a volume of 20 ml and stored in airtight bottles. These extract and the powder was used for the present study.

Phytochemical studies: Preliminary phytochemical studies for various metabolites were conducted by adopting the methods described by various authors^{1,8,9,12}. The occurrence of alkaloids, glycosides, flavonoids, phenols and tannins, phytosterols, terpenoids, carbohydrates and proteins were tested.

Pharmacognostic studies: Organoleptic studies were conducted for the powder as per the test given by Jackson and Snowdown⁵. The behavior of powder with various chemicals the fluorescence characters was conducted^{2,4,6}.

RESULTS & DISCUSSIONS

The pharmacognostical characters of the leaf powders have been studied by screening the same through various parameters.

The organoleptic study of the plant powder of *Helixanthera wallichiana* indicated the the characters like colour, odour and taste as given in the Table 1. The powder when treated with various chemical reagents exhibited various colours like shades of brown, red, orange etc. and these when observed under uv showed the different shades of green (Table 2).

In the present study, phytochemical screening was carried out to detect the active compounds present in the plant and it showed the occurrence of alkaloids, glycosides, flavonoids, phenols, tannins etc. The results are depicted in the Table 3.

Table 1: Organoleptic studies of *Helixanthera wallichiana*

1	Colour	Coffee brown
---	--------	--------------

2	Odour	Characterestics
3	Taste	Slightly salty

Table 2: Behaviour towards chemical reagents and fluorescent analysis of the *Helixanthera wallichiana* powder

Sl No	Treatment with chemical reagents	Observation under visible light	Observation under uv light of wave length 254nm
1	Powder as such	Coffee brown	Greenish brown
2	Powder +1N sodium hydroxide in methanol	Brownish red	Green
3	Powder + 1N sodium hydroxide in water	Deep red	Dark green
4	Powder + 50% hydrochloric acid	Dark brown	Light green
5	Powder + 50% Sulphuric acid	Black	Dark green
6	Powder + 50% Nitric acid	Orange	Fluorescent green
7	Powder + Petroleum ether	Light brown	dark brown
8	Powder + Chloroform	Greenish black	Light green
9	Powder + Picric acid	Brown	Green
10	Powder + 5% Ferric chloride solution	Black	Dark green
11	Powder + 5% Iodine solution	Greenish black	Black
12	Powder + Methanol	Brown	Dark green
13	Powder + (Nitric acid + Ammonia)	Reddish brown	Green

Table 3: phytochemical analysis of *Helixanthera wallichiana*

TEST	Observation
Tests for alkaloids	
Mayer's test	+
Wagner's test	+
Hager's test	+
Dragendorff's test	+

Test for glycosides	
Salkowski Test	+
Keller Kiliani test	+
Test for flavonoids	
Shinoda test	+
Lead acetate test	+
Alkaline reagent test	+
Test for phenols and tannins	
FeCl ₃ test	+
Gelatin test	+
Test for saponins	
Froth test	-
Test for sterols and triterpenoids	
Liebermann- Burchard's test	+
Salkowski test	-
Test for diterpenes	
Copper acetate test	-
Test for carbohydrates	
Molish's test	-
Fehling's test	-
Iodine test	+
Test for proteins and aminoacids	
Ninhydrin test	-
Xanthoproteic test	+

REFERENCES

1. Ashok Kumar, Jha KK, Dinesh Kumar, Abhirav Agrawal, Akhil Gupta. Preliminary phytochemical analysis of leaf and bark (mixture) extract of *Ficus infectoria* plant. The Pharma Innovation.2012; 1(5):71-76.
2. Biswal B, Saha D, Beura S, Jana SB, Koley A, Sur D *et al.* Pharmacognostic studies of leaves of *Derris indica*. International Journal of Research in Pharmaceutical and Biomedical Sciences.2011; 2(1):294-296.
3. Cecil J Saldanha, Dan H Nicolson (editors), Flora of Hassan district Karnataka, India.Amerind Publishing Co.Pvt Ltd, New Delhi, 1976, 307-308.
4. Chase CR, Pratt RF. Fluorescence of powdered vegetable drugs with particular reference to the development of systems of identification. J American Pharm Assoc. 1949;38:324-333
5. Jackson BP, Snowdown DW. Powdered Vegetable drugs. Cheer Chil Ltd. 1968, 25.
6. Kokoshi GJ, Kokoshi JR, Sharma FJ. Fluorescence of powdered vegetable drugs under ultra violet radiation. J AMer pharm Assn. 1958;38(10):715-717
7. PrabhuKumar KM, Sreeraj V, Binu Thomas, Manudev KM, Rajendran A. Validation and documentation of rare endemic and threatened (RET) plants from Nilgiri, Kanuvai and Madukkarai forests of southern Western Ghats, India. Journal of Threatened Taxa.2012; 4(15):3436-3442.
8. Prashant Thiwari,Bimlesh Kumar, Mandeep Kaur, Gurpreet Kaur, Harleen Kaur. Phytochemical screening and extraction: A review.Internationale Pharmaceutica Scientia.2011; 1(1):92-106.
9. Savithramma N, Linga M,Suhrulatha D. Screening of medicinal plants for secondary metabolites. Middle East Journal of Scientific Research.2011; 8(3):579-584.
10. Shanavaskhan AE, Sivadasan M, Ahmed H Alfarhan, Jacob Thomas. Ethnomedicinal aspects of angiospermic parasites and epiphytes of Kerala India. Indian Journal of Traditional Knowledge.2012; 11(2):250-258.
11. Sunil Kumar KN, Sangeetha B,Rajalekshmi M,Ravishankar B, Muralidhar R, Yashovarma B. Pharmacognostical and phytochemical studies on dyer's oleander mistletoe,*Viscum orientale* Willd. Indian journal of Natural products and Resources.2013; 4(3):260-269.
12. Yadav RNS, Munin Agarwal. Phytochemical analysis of some medicinal plants.Journal of Phytology.2011; 3(12):10-14.